American River Basin: Antelope Creek Improvement Project

Attachment 10: Costs and Benefits Summary

The Antelope Creek Improvement Project has both quantifiable and non-quantifiable benefits. Attachments 7, 8, and 9 detail the flood damage reduction, water supply, and water quality and other benefits, respectively. This attachment provides a summary of the costs and benefits relating to this project.

The total capital cost for the Antelope Creek Improvement Project is $5,839,747. The total present value cost of the project is $4,666,609, and together, this project has a cumulative quantitative benefit of $988,378. This is equivalent to an overall benefit-cost ratio of 0.21.

It is important to note that the quantitative analyses do not reflect all the benefits provided by this project. As documented in Attachments 7, 8, and 9, this project possesses numerous benefits for which monetary values cannot easily be assigned. These qualitative benefits are reviewed in the following section. The overall quantifiable benefits of this proposal are summarized in Table 20, Proposal Project Costs and Benefits Summary, at the end of this attachment.

Qualitative Flood Damage Reduction Benefits

- The Antelope Creek Improvement Project will mitigate all impacts of planned future development. The developments are expected to increase runoff in Antelope Creek by 900 cubic feet per second (cfs) and this project will reduce the peak flow by 1,000 cfs. With this project implemented, it is expected that no other flood mitigation project will be required for this reach of Antelope Creek in response to planned future development.

Qualitative Water Supply Benefits

- As a result of the Antelope Creek Improvement Project, stormwater will be retained behind the new on-stream weirs and percolate to groundwater. This water would be stored in the underlying groundwater aquifers of the North American Groundwater Sub-basin and made available for use in future years. Placer County Water Agency (PCWA) uses groundwater to augment its surface water supplies in dry years and emergencies, thus, it is assumed that this groundwater would be used by PCWA via existing infrastructure to reduce reliance on surface water supplies, resulting in a decrease in water supply costs for the agency.

- As previously noted, the availability of PCWA surface water supply varies based on weather conditions and infrastructure maintenance downtime. By restoring the operating capacity of Clover Valley Reservoir, the Antelope Creek Improvement Project will improve water supply reliability within the PCWA service area. The proposed project will increase the supply reliability for PCWA customers by increasing both the operational capacity of the Clover Valley Reservoir and the amount of groundwater available in the future.

- The proposed Phase 3 improvements of the Antelope Creek Improvement Project include desilting of the Clover Valley Reservoir and constructing a pipeline to bypass the unlined portion of the Antelope Canal, near the Union Pacific Railroad track crossing, that has experienced severe

erosion and down-cutting causing the reservoir to become silted, impairing the reservoir capacity, and increasing sediment-loading to Clover Valley Creek and further downstream Antelope Creek. Desilting of the reservoir will increase the flow-regulating capacity of the reservoir (minimizing releases downstream during flood events) and will provide PCWA with increased operational flexibility, especially during the fall months when PG&E's Bear River Canal is shut down for maintenance. PCWA receives a significant amount of their water supplies from the Bear River Canal, and during PG&E's annual canal maintenance, PCWA must store enough water in their system to meet shortfall. The added capacity provided by the reservoir desilting helps PCWA offset the shortfalls experienced annually and provides the retail purveyor with more water system stability.

Qualitative Water Quality Benefits

- Water quality benefits will also be achieved as a result of the Antelope Creek Improvement Project through the reduction in sediment loading to Clover Valley Reservoir and downstream reaches of Clover Valley Creek and Antelope Creek. By limiting the amount of sediment entering the reservoir via the reservoir's connection to the adjacent canal system (vis-à-vis the pipeline installation), the diverted water will no longer be in contact with bare earth, resulting in reduced sediment load, turbidity and exposure to other soil contaminants and organics. These benefits will also be transferred to Antelope Creek and other creeks when waters from Clover Valley Reservoir spill into the downstream reaches during high flows.

Other Expected Benefits

- The Antelope Creek Improvement Project will include significant improvements that will result in increased aesthetic, recreational and education opportunities. In-stream improvements will include bank re-contouring to ensure overbank flows, specific habitat enhancements for fisheries, removal of invasive plant species and replanting with natives, all of which will improve habitat for two threatened and endangered species, including Chinook salmon and Steelhead Trout. An interpretive trail sign system and a public trailhead /community node will also improve access to the multi-purpose trail system while helping to educate the public on the project.

Table 20 - Proposal Project Costs and Benefits Summary Proposal: American River Region IRWM Proposition 1E Grant Proposal Antelope Creek Improvement Project Agency: Placer County Flood Control and Water Conservation District							
Project	Agency	Total Present Value Project Costs	Total Present Value Project Benefits				B/C Ratio
			Water Supply	Flood Damage Reduction	Water Quality and Other	Total	
(a)	(b)	(c)	(d)	(e)	(f)	(g) (d) + (e) + (f)	(h) (g) / (c)
Antelope Creek Improvement Project	Placer County Flood Control and Water Conservation District	$4,666,609	$573,188	$268,000	$147,190	$988,378	0.21